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ABSTRACT

Suspecting that computer assisted instruction (CAI) could help teach grammar to freshman composition students at Northeast Missouri State University (NMSU), three instructors received a research grant to begin a program of testing basic writing skills and to initiate CAI instruction for those students who needed help in the tested areas. A survey of available literature on the pros and cons of the computer as teacher helped create a clear idea of the computer's place in English instruction and led to the conclusion that the programs should be written by the teachers themselves. The first step in the project was the writing of a diagnostic test, which was completed in time to be administered to the second session summer composition students. Slight modifications readied it for use in the fall. Having become more familiar with NMSU's computer and the English program on it, the instructors conducted additional research through the ERIC system and examined the English programs available on the PLATO system. Both activities pointed up the great amounts of time and money needed to get a full-fledged program going. Still, the instructors were convinced that the computer could have a positive effect on NMSU's English program. (The areas covered by the diagnostic test and the ERIC materials surveyed are appended.) (JL)

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An Overview of the Computer as Teacher: A Progress Report of a Research Project to Introduce Diagnostic Testing and Computerized Instruction Into the Composition Program at Northeast Missouri State University

by

Patricia Cottey

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An Overview of the Computer as Teacher:
A Progress Report of a Research Project
to Introduce Diagnostic Testing and
Computerized Instruction Into the
Composition Program at Northeast
Missouri State University

Thesis: Used thoughtfully and cautiously, the computer will serve as a valuable assistant in the teaching of composition at Northeast Missouri State University.

I. Background.

II. Pros and Cons of the Computer as Teacher.

III. Existing Testing and Instruction Programs.

IV. Progress of Project.

An Overview of the Computer as Teacher: A Progress Report of a Research Project to Introduce Diagnostic Testing and Computerized Instruction Into the Composition Program at Northeast Missouri State University

Introduction.

In the spring of 1981, Dr. Shirley Morahan, Dr. Orlee Holder, and Instructor Pat Cottey filed a request for a research grant to enable them to begin a program of testing the basic writing skills of Composition I students at Northeast Missouri State University and to initiate computer assisted instruction for those students who needed help in the tested areas. In May, we were notified that the college had awarded us a grant of $3,000.00 for the summer of 1981.

This paper will report the initiation of the project and the progress to this date, September 1, 1981. If I had to assign a paradigm to this report, I would say that it is a process paper intended for two audiences--the English faculty and the administration of NMSU, and a more general audience of the other researchers who are attempting, or will be attempting, the same sort of task. The first audience will be interested in the report as work done to date; the second audience hopefully will benefit from shared problems and successes.

Background.

I have taught English composition at NMSU for six years. During that time I have been perplexed about the teaching of

grammar in my composition classes--how much, or if at all. My first year at NMSU the Director of Freshman Composition recommended using the Claude W. Faulkner books in Composition I, Writing Good Sentences and Writing Good Prose. The first is a definitive traditional grammar workbook. I used Writing Good Sentences for two years. As in most English departments, there is a wide divergence of philosophies concerning the teaching of grammar, and each teacher is allowed to pick his own texts and follow his own conscience in this matter. Dr. Shirley Morahan took over the job of Director of Freshman Composition my second year of teaching. Her philosophy is one of restraint in the teaching of grammar, per se. As I became more knowledgeable of the research in the teaching of composition, I moved away from formalized teaching of grammar to a tutorial or conference classroom where these skills were discussed in connection with individual writing problems.

Because of the diverse teaching methods in the area of grammar, and for my own growth as a teacher, I have felt a need to test the progress of my students in this area. But, as anyone knows who has written diagnostic tests, constructing such an instrument is not an easy task; and the time limitations of a full-time composition teacher have made it impossible for me to construct a satisfactory test.

Also, the limitations of time have made me begrudge the hours spent with the class or with individuals in discussing matters of grammar. We are, after all, teachers of composition and need that precious semester of English I to deal with the broader aspects of the student as writer. I agree with E. L. Thorndike's

statement in Education: "Just because personal teaching is precious and can do what apparatus can not, it should be saved for its peculiar work. The best teacher uses books and appliances as well as his own insight, sympathy, and magnetism."[1] I believe that the appliance for today is the computer, and, properly used, that it can solve much of the English teacher's dilemma concerning the teaching of grammar.

The Pros and Cons of the Computer as Teacher.

I feel safe in stating that a majority of English teachers distrust machines. I have no statistics to prove this, but a stroll around the third floor of the Administration-Humanities Building during class hours will prove my point. Red-faced English teachers can be seen struggling with tapes, reels, video recorders, opaque projectors, overhead projectors, caramates, and synchronizers. Some even refuse to allow these demons in their classrooms. Indeed, all three researchers have seen their professional dignities slink out the classroom door, whipped once more by the machine.

To a certain extent, our feeling of distrust is justifiable. The holdings in Pickler Memorial Library, NMSU, dealing with computer assisted instruction reveal an honest concern with the place of the machine in education. The title of one book, Computer Managed Instruction: Theory and Practice , by Frank Baker, sent a quiver of fear through me. I cautiously pulled the book off the shelf and was relieved to note that Mr. Baker was aware of the unpleasant connotations of the title. He assured the reader that "computer managed instruction" was a common mnemonic and

and was perfectfully legitimate and innocuous.[2] The key word here is managed. When programs are thoughtfully selected by instructors, the management is in good hands. Even better, when the programs are written by the professors who will be using them, the management is an opportunity to serve the student more fully. The philosophical questions concerning the computer and English education, though, demand thoughtful caution when introducing the machine into a program.

Maxwell H. Goldberg speaks to these questions in his book Cybernation, Systems, and the Teaching of English: The Dilemma of Control. He notes that we who work in a discipline such as English assess education holistically. We believe that there is more to the total than the sum of its parts. More particularly, we who teach composition feel that each step in the writing process is significant, that an essay is the end product of several exciting and creative stages, and that that product is more than the sum of the process. An argument presented by James Squire in Goldberg's book in which Squire criticizes mechanized teaching saying it eliminates all that cannot be numerically added up must be considered. Squire says of mechanized teaching, "It dissolves the vital whole into analytic aggregates of pellets or packets of learning for achieving 'discretely targeted goals...'."[3] Squire goes on to say that this will not work if "one conceives the purpose of education to be the cultivation of the intellect and the development of human sensitivity."[4] Goldberg also quotes Kenneth Boulding's idea that many learning processes involve "structuring of complete images of the world, in which we have to operate without positive feedback or reinforcement for long

periods."[5] In addition, Dr. Boulding feels that programmed learning can produce boredom, a feeling of being insulted, and a loss of personal dignity, and that it may discourage learning if the instruction is too elementary. He goes on, "Programmed learning fails to perform a good deal of the functions of a teacher," which are "to cheer students up, to encourage the discouraged, and to keep alive the students' sense of dignity and worth in a process that often destroys self-confidence and the sense of personal worth."[6] Boulding describes the teacher as a "nonlinear computer of enormous capacity." Goldberg advocates caution in the amount of time the learner spends alone with the computer. The time should be carefully balanced with other learning components--books, other students, and teachers: "Thus cybernetic anomie is neutralized or prevented."[7]

With these words of caution, we can now consider some of the advantages of computerized instruction. Jerome P. Lysaught in A Guide to Programmed Instruction points out that when Socrates developed a tutorial question and answer method for teaching geometry, which was recorded by Plato in the dialogue, Meno, Socrates became one of the earliest programmers. In teaching writing, we have found this principle particularly effective. Writing labs utilizing teacher-writer conferences and peer editing provide the writer with reinforcement at every step of the writing process. The more quickly reinforcement follows an action, the faster the modification or repetition of behavior. The computer, of course, is capable of immediate reinforcement. "Computer Assisted Instruction in English Teacher Education" lists the following advantages of computerized instruction: 1. The

instructions consist of carefully sequenced steps. One skill builds on another. 2. Instruction is goal-oriented. 3. One skill at a time is presented. 4. The student is actively involved in learning. 5. The student proceeds at his own pace.[9]

From my experience with students, I would add the following advantages. This generation is comfortable with machines; today's student is accustomed to learning from machines. Also, the learning situation is a private one; the student need not fear humiliation in front of others because of a wrong answer. In addition, the machine does not waste time: every part of the program is relevant. In answer to the argument that the machine dehumanizes the student, it can be said that the machine gives the student the responsibility of scheduling his time with it and of generating the wherewithal to learn from it.

Existing testing and instruction programs available at NMSU.

English placement tests are not administered to entering freshmen. Evaluation of a student's proficiency in English mechanics is based on his ACT score. If he has a score of thirteen or less, his freshman advisor will recommend that he work in the writing lab for one semester before entering Composition I.

The student with serious spelling problems can go to the Study Skills Center which is located in the writing lab on the third floor of the AH Building. The Study Skills Center has addressed itself to this problem for several years.

The student deficient in mechanics finds most of his help in the writing lab. English majors and graduate assistants work as tutors. They have at their disposal a few diagnostic tests

and a limited number of audiovisual aids. Many of these programs assume that the student knows the language of traditional grammar, and, thus, they have a serious built-in problem. Also, perhaps because they are dealing with elementary skills, many of these programs "talk down" to the student.

A recent addition to the writing lab has been a terminal and one English computer lesson. In the fall of 1980, NMSU installed an IBM 4331-2 computer system and subscribed to the MUSIC program. Unlike the PLATO system, there are no English programs to be purchased from MUSIC. The one lesson was purchased from Pipeline at a cost of $250.00. Two more terminals were installed in the lab this fall and the administration, in encouraging the development of CAI, has recognized this type of instruction as a feasible solution to the problems of less money, fewer faculty, and more students. Perhaps accidentally, in granting this research grant, they have taken a step toward solving one of the common problems of CAI. In an article by George Gerhold, "Teacher Produced CAI," he claims the major obstacle to CAI to be lack of acceptance by teachers, and he has found the best way to overcome this problem is to involve teachers in writing the programs.[10] We do, indeed, feel that programs tailored by us, for our students, will be more effective and meaningful for the Language and Literature faculty of NMSU.

Progress of Project.

Any project designed to test and remediate basic skills problems must first develop a diagnostic test. The early meetings of this research were concerned with deciding which basic skills

we wished to test. We agreed on the three broad categories of punctuation, usage, and grammar. Dr. Morahan was to work with usage, Dr. Holder with punctuation, and I with grammar. Some skills are overlapping, so we carefully listed those each of us would include in our test. The skills tested are listed in Appendix A.

Next, we spent several hours in the lab going over the various diagnostic tests that were in the file. The Prentice-Hall Diagnostic Test for Writers and the diagnostic tests to accompany The Harbrace College Handbook were representative of the type of tests in the files. We concluded that we would have to construct our own test because the tests available were too lengthy for our purpose. We wanted the test to be administered in two fifty-minute periods. And many of the tests contained the language of traditional grammar. We were in agreement that we wanted to know how correctly the student could use the English language--not how much he knew about traditional grammar. Our first goal, then, was to have a test ready to give to the second session summer students so that we could have some of the "bugs" worked out before the fall semester. The diagnostic test was administered to the second semester summer Composition I students. The test proved workable, and, with a few minor changes, the test was administered to eighteen sections of Composition I this fall. Participating teachers are presently meeting to discuss test results and steps to be taken to assist the students deficient in one or more of the areas tested.

Our next step was to become acquainted with the computer and the English program now on it. A programmer described to us the

steps to follow to "call up" the English program. We gained knowledge of specific problems in the lesson and in the programming of the lesson; and we felt that making this program usable for the fall was a worthwhile and attainable goal. Dr. Holder volunteered to write definitions for any terminology used in the lesson that the student might find unfamiliar. The student will turn to a glossary for the definitions when he needs help.

An ERIC search was done for a list of colleges using CAI in writing instruction. Although no list of colleges using CAI instruction in writing or grammar was available, we were rewarded with a list of nine articles dealing with the use of CAI in English. The list is appended to this paper and labeled as Appendix B.

I think it was at this time we began to realize the immensity of the project that we had undertaken. Lester Golub, in "Computer Assisted Instruction in English Teacher Education," one of the ERIC articles, sounded a faint warning. "CAI programs are extremely expensive to mount and the program takes a considerable amount of knowledge and many years to develop."[11] Golub's article was written in 1972, and, with amusement, I read his prediction that by 1984 English teachers would not be teaching grammar, usage, spelling, or composition. A computer, he said, would be doing it. We are a bit behind his schedule. Incidentally, Golub also made a prediction with overtones that I found disturbing. "In the future, the teacher of English will be transformed from a teacher of the English language and its literature to a teacher of the uses of language to control our multiple environments."[12]

In another ERIC article, Peter Zoller gives an account of

the development of CAI at Wichita State University, and this account added to our awareness that it would take several years to develop the complete program we envisioned. Ms. Anna Marie Thames of Golden West College, Huntington Beach, California, shared with Zoller the programs that she had developed. It had taken her five years to develop fifteen programs. Zoller used twelve. Oh for an Anna Marie Thames!

Perhaps the ERIC listing, "The Language Arts Routing System Instructor's Manual," provided the most practical knowledge for us. Here were listed the actual lessons and skills tested. Each lesson contained a short pretest--three to nine items-- that could be finished in less than five minutes. There were sixty-five lessons, and the length of time to work them varied from five to forty-five minutes.

In the "Community College English Lesson Index," we found a description of the PLATO lessons available. The University of Illinois and the University of Indiana are the only two schools that are using the English lessons. Through the NCTE we learned that the closest PLATO terminal was located at Western Illinois University at Macomb, Illinois, and we visited that campus on June 23. Although the English lessons are not being used at W.I.U., the attendant was able to "call up" the programs for us to see. We spent the afternoon calling up various programs and working them. There are 220 English programs in the system, and they are beautifully done in every way. The graphics are outstanding, and the tone of the lessons and the comments to the students make them enjoyable to work. We all agreed that we would heartily recommend buying the PLATO lessons. But, alas, they are

beyond our budget, so back to the drawing board.

Our immediate goals, then, were: 1. To have a diagnostic test ready for use in Composition I this fall. 2. To make the existing English computer lesson usable. 3. To develop a lesson on sentence fragments. Sentence fragments are one of the most prevalent problems with the students we encounter in Composition I, and we agreed that this should be the first lesson developed by us. Our long range goals would include lessons for all the categories tested and a test and lessons for spelling. We felt that we could defer spelling as a category because there is help in this area in the Reading Skills Center.

Conclusion.

We feel even more committed than before to the worthiness of computer assisted instruction and to systematic evaluation of the Composition I student's mechanical skills to determine the areas where he or she needs additional instruction. By constructing such a test, and by taking the first steps to make competent computer instruction available to the student, we have taken the first steps to the inclusion of a program in the Language and Literature Department of NMSU that will help solve many of the problems that the department will be facing in the 1980's.

We realize, too, that the place of the machine in education must be carefully evaluated; the inclusion of computer assisted instruction in the English program at NMSU must be undertaken cautiously and thoughtfully by the administration and faculty. We believe with Arthur Goldberg that:

A great responsibility, then, for us as English teachers,

> is to help our students assert their bit of fiat by encouraging them to develop strength, finesse, and imaginative courage in eliciting and fulfilling their own formative nature.' To accept this challenge is, at the same time, to relegate learning systems to their appropriate role in the teaching of English--that is, a secondary role--as adjunct--not as main or exclusive agent of instruction.[13]

Therefore, with the knowledge and experience we have been privileged to gain because of this summer's research, we feel confident that, increasingly, the computer will provide positive, worthwhile assistance to the composition students and English faculty of Northeast Missouri State University.

Appendix A

Grammar skills tested:

1. Fragments.
2. Dangling participles.
3. Verbs.
    a. Proper tense.
    b. Agreement with subject.
    c. Agreement in "there is" and "there are."
    d. Plural words acting as singular subjects.
    e. Agreement with "who" or "that."
4. Pronoun case.
5. Pronoun agreement.
6. Run-on sentences.
7. Comma splice.
8. Subjunctive voice.
9. Misplaced modifiers.

Usage skills tested:

1. All right, alright.
2. It's, its.
3. Set, sit.
4. Lie, lay.
5. Who's, whose.
6. Who, what, that.
7. Affect, effect.
8. Double negative.
9. Their, there, they're.

10. Rise, raise.
11. Real, really.
12. Principal, principle.
13. Use of comparative.
14. Your, you're.
15. A lot.

Punctuation skills tested:

1. Comma.
    a. Before coordinating conjunction in a compound sentence.
    b. After introductory subordinate clause.
    c. With parenthetical word or words.
    d. Between items in a series.
    e. With restrictive and nonrestrictive clauses.
2. Semicolon.
3. Colon.
4. Quotation marks.
    a. Direct vs. indirect quotation.
    b. Comma placement.
    c. Split quotations.
    d. Period placement.
    e. Question mark placement.
5. Capital letters in names and places.
6. Apostrophe showing possession.

Appendix B

List of ERIC Articles

1. ED179086.
   Ornan, Uzzi.
   "Generating and Transforming by a Computer Without a Dictionary."

2. ED162324.
   Briand, Paul L., Jr.
   "Technology in the Teaching of Composition."

3. ED127611.
   Zollep, Peter T.
   "Composition and the Computer."

4. ED122309.
   Michael, Gary; Sliger, Mary.
   "Language Arts Routing System (LARS) Instructor's Manual. Community College English Project."

5. ED122308.
   Jordan, Pauline; and others.
   "Community College English Lesson Index."

6. ED099887.
   Wittig, Susan.
   "Three Behavioral Approaches to the Teaching of College-Level

Composition: Diagnostic Tests, Contracts, and Computer-Assisted Instruction."

7. ED064277.
Golub, Lester S.
"Computer Assisted Instruction in English Teacher Education."

8. ED034393.
Suffes, Patrick; Van Campen, Joseph.
"Stanford Program in Computer-Assisted Instruction for the Period April 1, 1968 to June 30, 1968. Progress Report."

9. ED012688.
Rodgers, Theodore S.
"Linguistic Considerations in the Design of the Stanford Computer-Based Curriculum in Initial Reading."

Notes

[1] E. L. Thorndike, Education (New York): The MacMillan Company, 1912), p. 167.

[2] Frank B. Baker, Computer Managed Instruction: Theory and Practice (Englewood, N. J.: Educational Technology Publications, 1978), p. 4.

[3] Maxwell H. Goldberg, Cybernation, Systems, and the Teaching of English: The Dilemma of Control (Urbana, Ill.: National Council of Teachers of English, 1972), p. 47.

[4] Goldberg, p. 48.

[5] Goldberg, p. 7.

[6] Goldberg, p. 8.

[7] Goldberg, p. 45.

[8] Jerome P. Lysaught, A Guide to Programmed Instruction (New York: John Wiley and Sons, Inc., 1963), p. 3.

[9] Lester S. Golub, "Computer Assisted Instruction in English Teacher Education," (Paper presented at Conference on English Education, National Council of Teachers of English, St. Louis, April 6-8, 1972), p. 2.

[10] George Gerhold, "Teacher Produced CAI," in Computer Assisted Learning: Scope, Progress and Limits (Amsterdam, The Netherlands: North Holland Publishing Co., 1980), p. 17.

[11] Golub, p. 1.

[12] Golub, p. 1.

[13] Goldberg, p. 54.

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Jacobs, Paul; Maier, Milton H.; and Stolurow, Lawrence M. A Guide to Evaluating Self-instructional Programs. New York: Holt, Rinehart, and Winston, 1966.

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Thorndike, E. L. Education. New York: The MacMillan Co., 1912.